

WHAT IS CLAIMED IS:

1. A method for manufacturing GaN light emitting diodes, comprising the steps of:

5 (a) forming a light emitting structure on a sapphire substrate, said light emitting structure including a first conductive GaN clad layer, an active layer and a second conductive GaN clad layer sequentially stacked on the sapphire substrate;

10 (b) dividing the light emitting structure into plural units with a designated size so that the first conductive GaN clad layer of a thickness of at least approximately 100Å remains;

(c) attaching a conductive substrate to exposed upper
15 surfaces of the unit light emitting structures using a conductive adhesive layer;

(d) irradiating a laser beam on a lower surface of the sapphire substrate so that the sapphire substrate is removed from the unit light emitting structures, wherein the residual
20 first conductive GaN clad layer is removed so that the light emitting structure is perfectly divided into the unit light emitting structures with a size the same as that of light emitting diodes to be finally manufactured;

(e) forming first and second contacts respectively on
25 the surface of the first conductive clad layer, from which the sapphire substrate is removed, and the exposed surface of the conductive substrate; and

(f) cutting the resulting structure along the divided lines of the unit light emitting structures into plural unit light emitting diodes.

5 2. The method for manufacturing GaN light emitting diodes as set forth in claim 1,

 wherein in the step (b), the thickness of the residual first conductive GaN clad layer is less than approximately $2\mu\text{m}$.

10 3. The method for manufacturing GaN light emitting diodes as set forth in claim 1,

 wherein in the step (b), the thickness of the residual first conductive GaN clad layer is less than approximately $1\mu\text{m}$.

15 4. The method for manufacturing GaN light emitting diodes as set forth in claim 1,

 wherein the step (a) includes the step of forming a reflective layer made of a conductive material on the second conductive GaN clad layer.

20

 5. The method for manufacturing GaN light emitting diodes as set forth in claim 4,

 wherein the reflective layer is made of a material selected from the group consisting of Au, Ni, Ag, Al and their
25 alloys.

 6. The method for manufacturing GaN light emitting

diodes as set forth in claim 1,

wherein the step (c) includes the sub-steps of:

(c-1) forming the conductive adhesive layer on the lower surface of the conductive substrate; and

5 (c-2) attaching the lower surface of the conductive substrate provided with the conductive adhesive layer to the exposed upper surfaces of the unit light emitting structures.

7. The method for manufacturing GaN light emitting
10 diodes as set forth in claim 1,

wherein the step (c) includes the sub-steps of:

(c') forming the conductive adhesive layer on the upper surfaces of the unit light emitting structures; and

(c'') attaching the conductive substrate to the upper
15 surfaces of the unit light emitting structures provided with the conductive adhesive layer.

8. The method for manufacturing GaN light emitting diodes as set forth in claim 1,

20 wherein the conductive substrate is made of a material selected from the group consisting of silicon (Si), germanium (Ge), SiC, ZnO, diamond, and GaAs.

9. The method for manufacturing GaN light emitting
25 diodes as set forth in claim 1,

wherein the conductive adhesive layer is made of a material selected from the group consisting of Au-Sn, Sn, In,

Au-Ag, Ag-In, Ag-Ge, Ag-Cu and Pb-Sn.

10. The method for manufacturing GaN light emitting diodes as set forth in claim 1,

5 wherein the first conductive GaN clad layer is a GaN crystalline layer doped with an n-type impurity, and the second conductive GaN clad layer is a GaN crystalline layer doped with a p-type impurity.